

AMENDMENTS TO THE CLAIMS:

Claim 1-16 (canceled)

17. (new) A computer system for processing stack-based instructions, comprising:

a register file that has entries each designed to be able to hold a word of data;

an advanced pointer stack that has entries each designed to be able to hold an entry address in said register file and that, in combination with said register file, is to virtually configure uppermost part of the operand stack grounded on all the issued instructions;

a completed pointer stack that has entries each designed to be able to hold an entry address in said register file and that, in combination with said register file, is to virtually configure uppermost part of the operand stack grounded on all the completed instructions;

a data buffer that has entries each designed to be able to hold a word of data and that can hold lower operand-stack elements that are common to said two operand stacks;

an instruction buffer that is a FIFO queue for holding substances of instructions that have been already issued but not yet completed; and

means for executing operations involved in issued instructions out of order;

wherein, in the course of issue of an instruction / a group of instructions,

a free entry of said register file is allocated for each word push involved in said instruction / said group of instructions, said advanced pointer stack is so modified as to indicate the state of the operand stack right after said instruction / said group of instructions, and substance of said instruction / substances of said group of instructions, together with the address/addresses of newly allocated entry of said register file, is/are entered into said instruction buffer; and

wherein, if the instruction / a group of instructions held in head part of said instruction buffer is/are ready to be completed, in accordance with the substance/substances in said head part, said completed pointer stack is modified, said head part is dequeued from said instruction buffer, and each entry of said register file whose holding data becomes void is freed.